

CLAIMS

1. In combination with a submerged sea craft having a hull through which main flow channels extend between water inlet openings in the hull and propulsion jet nozzles projecting from outlets in the hull in parallel spaced relation to a centerline of the hull, maneuvering control flow means enclosed within the hull, comprising: a secondary flow channel connected to each of the main flow channels in spaced relation to the jet nozzles, two subchannel branches extending from each of the secondary flow channels in different directions to the outlets in the hull; and controllable flow diversion means for selectively diverting flow of pressurized water from the main flow channel into the secondary flow channel to undergo outflow as jets through the subchannel branches from the hull in said different directions from the outlets in the hull.
2. The combination as defined in claim 1, wherein said flow diversion means includes: a sidewall flap hingedly mounted on the main flow channel at an outflow opening into the secondary channel; and actuator means connected to the flap for rotation thereof between a closure position closing the outflow opening and a flow diverting position within the main flow channel at an acute angle to said outflow opening.
3. The combination as defined in claim 2, wherein said flow diversion means further includes: gate means hingedly mounted on the hull for selectively blocking said outflow of the jets through the subchannel branches from the hull in said different directions.

4. The combination as defined in claim 3, wherein one of said different directions is perpendicular to the hull centerline, whereby said outflow of the jets from the hull controls steering; and the other of the different directions is at an acute negative thrust angle to the hull centerline, whereby said outflow of the jets from the hull controls backing and stopping.
5. The combination as defined in claim 1, wherein said flow diversion means includes: gate means hingedly mounted on the hull for selectively blocking said outflow of the jets through the subchannel branches from the hull in said different directions.
6. The combination as defined in claim 1, wherein one of said different directions is perpendicular to the hull centerline, whereby said outflow of the jets from the hull controls steering; and the other of the different directions is at an acute negative thrust angle to the hull centerline, whereby said outflow of the jets from the hull controls backing and stopping.
7. The combination as defined in claim 1, wherein said flow diversion means includes: flapper means hingedly mounted at a juncture between the two subchannel branches for displacement between positions respectively blocking inflow into one of the subchannels branches.
8. The combination as defined in claim 7, wherein said flow diversion means further includes: gate means hingedly mounted on the hull for selectively blocking said outflow of the jets through the subchannel branches from the hull.

9. In combination with a hull of an underwater sea craft through which pressurized water flow is conducted in one direction through main flow channels to nozzles from which forward propulsion jets emerge; maneuver controlling flow means associated with said main flow channels for discharge of steering and backing jets from outlet openings in the hull in different directions relative to said one direction of flow through the main flow channels; said maneuver controlling flow means comprising: a secondary flow channel connected to each of the main flow channels in rearwardly spaced relation to the nozzles; a pair of subchannel branches extending from each of the secondary flow channels to said outlet openings in the hull; flap means mounted on each of the main flow channels for displacement between positions alternatively blocking flow of the pressurized water to the secondary flow channels and to the nozzles or dividing said flow of the pressurized water between the secondary flow channels and the nozzles; and gate means selectively displaced between positions blocking said discharge from all of the outlet openings in the hull or permitting either one of said discharge of the steering and backing jets from the outlet openings in the hull associated therewith.

10. The combination as defined in claim 9, wherein said gate means associated with each of the main flow channels comprises: steering and backing closure gate elements pivotally mounted on the hull at each of a pair of the outlet openings therein associated with each of the main flow channels.

11. The combination as defined in claim 9, wherein said gate means associated with each of the main flow channels comprises: a gate element pivotally mounted on the hull at each of the openings therein and displaceable to three positions respectively blocking outflow of the

discharge from the outlet openings and alternatively blocking outflow of either the steering or the backing discharge through the outlet openings from one of the pair of the subchannel branches; and flapper means mounted in the secondary flow channel for alternatively blocking flow from the secondary flow channel into one of the pair of the subchannel branches.